

*Geology 110 Sect.4 Syllabus; Fall, 2019*

<b>GEOL110 Section 4 (3 credits)</b>	<b>Fall, 2019</b>	<b>Physical Geology</b>
<b>Dr. Scott Werts</b>		<b>Office: Sims 212A</b>
<b>Course Classroom: Sims 201</b>		<b>Meeting Time: TR 12:30-1:45</b>
<b>Email: <a href="mailto:wertss@winthrop.edu">wertss@winthrop.edu</a></b>		<b>Office Hours: TR 9:30-11; or by appointment</b>
<b>Text: Essentials of Geology, 6<sup>th</sup> Edition. Marshak – eBook <a href="http://books.wwnorton.com/books/welbad.aspx?id=4294992490">http://books.wwnorton.com/books/welbad.aspx?id=4294992490</a></b>		<b>Office Phone: 803-323-4930</b>

**Course Goals and Objectives:** The objective of this course is to give the students a basic understanding of the physical and chemical processes that occur both within and on the surface of the Earth. The Earth is a very dynamic planet in which even the “solid Earth” is constantly in motion. Students will explore the sources of energy that drive these processes, gain an understanding of how these processes have given rise to the current state of the Earth and how these processes will continue to shape our future.

This course, combined with GEOL 113, fulfill 4 hours of the general education requirement for natural science courses at Winthrop University. There will be several writing assignments associated with homework that, when combined with the laboratory work, fulfill the minimum of 8 pages of writing required for the general education credit. These included assignments discussing the detailed processes of rock weathering and sources of climate change to the discussion of personal preferences of current and future energy resources. The additional general education requirements met by this course are included below.

1. **Students should be conversant with a few fundamental concepts from among the three main areas of natural science, including Earth, life, and physical sciences.** In this course, some example topics that meet these requirements will included plate tectonics, earthquakes, soil formation (with biological influences) and biostratigraphy.
2. **Students should be able to apply the scientific methodologies of inquiry.** Students in this course will perform many experiments and testing strategies on both solid and liquid earth materials.
3. **Students will be able to discuss the strengths and limitations of science.** This will be accomplished through discussions of scientific methodology, our understanding of space and time and the very definition of the natural world.
4. **Students will demonstrate an understanding of the history of scientific discovery.** Discussions of the development of the theory of plate tectonics, radioactivity and geologic time will be featured prominently as well as the timing of our understanding of climate change.
5. **Students will be able to discuss the social and ethical contexts within which science operates.** In this course, we will be discussing aspects of air, soil and

water pollution as well as domestic energy policy in relation to our personal responsibility and societal needs.

6. **Students will be able to communicate about scientific subjects.** Several homework and in class assignments will ask students to explain and expand on many of the subjects covered in both lecture and reading assignments.
7. **Students will be able to discuss the application of scientific knowledge to the social sciences and to non-scientific disciplines.** For example, this class will provide students insight into energy policy and environmental justice and basic information regarding considerations when purchasing a home (flood zones, soil types, land movements, etc.)

### **University Level Competencies**

Winthrop's University-Level Competencies (ULCs) identify learning outcomes that apply across all undergraduate programs and that all Winthrop graduates attain. These capacities are essential preparation for working productively and living meaningfully in the contemporary and emerging world. The ULCs were approved by Faculty Conference in October 2010.

#### **Competency 1: Winthrop graduates think critically and solve problems.**

In this course, students will be given the pieces to geologic puzzles and be asked to use these individual pieces to form an idea of how the Earth and its varied processes work. They will be asked to put these processes and components in context of size, scale and impact and decide how any challenges might be overcome.

#### **Competency 2: Winthrop graduates are personally and socially responsible.**

Because the Earth is a dynamic planet, we must live within the bounds of safety and reason with the natural world. In this course, we will discuss the ongoing battle of man versus nature on many fronts and discuss personal and social ethics and responsibilities since many personal decisions can also affect others.

#### **Competency 3: Winthrop graduates understand the interconnected nature of the world and the time in which they live.**

We will discuss the how the various parts of the Earth interact with each other. Discussions of how the deep earth influences the ocean, how the ocean affects the land, how the land affects the biology and how the biology, in turn, affect the Earth will all be discussed.

#### **Competency 4: Winthrop graduates communicate effectively.**

Students will communicate with their peers by completing difficult exam questions in small groups. They will communicate with their professor in class discussions. They will communicate in writing by completing homework questions explaining detailed scientific processes and also persuasive writing in discussion of the importance of energy choices.

The global learning component(s) of this course are the following: discussions of the water availability in various places globally and the overall inequity of resources; the

impact and variability of erosion and weathering on infrastructure and development in different regions around the globe; the variations of natural disasters as related to plate tectonics and landforms in different global regions.

**Course Preparation:** You are responsible for assigned readings in this course prior to the associated lecture. The information contained in these readings is pertinent to the course and is considered testable material. If you do not understand something from the readings, please ask. There is no such thing as a “dumb question” in this course and I will try in earnest to answer every question asked.

Physical geology is a very “visual” subject and many students view diagrams, drawings and pictures as a useful supplement to the readings and discussions in this course. I post all images used in my lectures on the course website prior to my lectures. You are welcome to print these prior to class if you wish and take notes along side them or view them online when studying after class time.

**Course Grading:** Your grade for this course will be based on the following distribution of work:

<b>3 Midterm Exams</b>	<b>100 Pts. Each</b>	<b>300 Pts.</b>
<b>1 Final Exam</b>	<b>150 Pts.</b>	<b>150 Pts.</b>
<b>10 Pop Quizzes</b>	<b>10 Pts. Each</b>	<b>100 Pts.</b>
<b>10 Homework Assignments*</b>	<b>10 Pts. Each</b>	<b>100 Pts.*</b>
<b>Total</b>		<b>650 Pts.*</b>

The quizzes will occur randomly throughout the course and will be conducted in the first 10 minutes of class. If you are not present to take the quiz within those first 10 minutes, you will receive a zero for the quiz. The quizzes will be composed of multiple choice or short answer questions from recently covered material in lecture and readings. A total of 13 quizzes will be given with your three lowest scores being dropped before determining your final grade. Because you have the opportunity to drop 3 quiz grades in this course, there will be no make-up quizzes offered.

Homework assignments will be distributed at various intervals throughout the semester. All assignments will be worth 10 points each. Most will be completed online through the textbook site. The website for these assignments is here:

<https://digital.wwnorton.com/essge06>

You should be able to register on this website with the access code included in your book or purchased directly from the book publisher on the website linked above. When you register, you should be register for the following course:

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This course is set up for this class specifically. Do not register under a different geology section as they may have different settings than ones I have established for this section. Generally, homework assignments will appear after we have covered the material in class. The assignments will remain open for approximately a week or week and a half, depending on the timing. Once the homework due date is reached, no more work will be accepted. It is therefore imperative that you complete your homework in a timely manner.

There will be a few other assignments that will be due during class. Those assignments can be found at [chem.winthrop.edu](http://chem.winthrop.edu). Go to "Courses", then find our class. All the lecture material and these particular homework assignments will be there.

The dates for the exams are included below. There will be no make-up exams without prior arrangement from the instructor *and/or* documentation of an emergency that necessitates the student missing class. If an exam is missed for non-emergency reasons, that exam will be made up at the end of the semester on a day and time to be arranged with the instructor. The format of the exam will be entirely essay questions. If you are in danger of missing class, it is best if you notify me by email as soon as possible.

Exams will mostly be in a multiple choice format using scantron forms. The final exam will be cumulative and will reflect both the course material discussed since Exam #3 and material from previous exams. A portion of each exam will be a "group effort" and will count as a smaller percentage of the total exam grade. Details of this exam format will be provided for you in class.

Grades for the course will be determined based on the following grading scale:

A	90 - 100%
B	80 - 89%
C	70 - 79%
D	60 - 69%
F	< 59%

A grading curve may be applied at the instructor's discretion, but the point value required for a particular grade will never be more than indicated above. A total of 90% of the points earned for the course will always equal an A.

**Statement on Cheating:** Your grade in this course will be based solely on your work alone. Any attempt to copy another student's answers during tests, quizzes or homework or any use of unauthorized materials (cheat sheets/information stored on calculators/etc.) during test and quiz time is strictly forbidden and could result in an "F" for the entire course in conjunction with other unpleasant administrative actions. Answers to questions from homework assignments should reflect your work, not sentences copied from books,

websites or from others students. Unethical behavior with regard to course material will not be tolerated.

**Students with Disabilities/Need of Accommodations for Access:**

Winthrop University is committed to providing access to education. If you have a condition which may adversely impact your ability to access academics and/or campus life, and you require specific accommodations to complete this course, contact the Office of Accessibility (OA) at [803-323-3290](tel:803-323-3290), or, [accessibility@winthrop.edu](mailto:accessibility@winthrop.edu). Please inform me as early as possible, once you have your official notice of accommodations from the Office of Accessibility.

Academic Success Center

Winthrop's Academic Success Center is a free resource for all undergraduate students seeking to perform their best academically. The ASC offers a variety of personalized and structured resources that help students achieve academic excellence, such as tutoring, academic skill development (test taking strategies, time management counseling, and study techniques), group and individual study spaces, and academic coaching. The ASC is located on the first floor of Dinkins, Suite 106. Please contact the ASC at 803-323-3929 or [success@winthrop.edu](mailto:success@winthrop.edu). For more information on ASC services, please visit [www.winthrop.edu/success](http://www.winthrop.edu/success).

Attendance Policy

Winthrop University policy states that students will not receive credit for a course in which they miss 25% or more of the scheduled class meetings. If you feel that you need to miss class for a legitimate reason, I just ask that you let me know and be prepared to provide documentation if necessary. It your responsibility to contact me regarding missed work or contact students for any missed notes.

The Office of Victims Assistance

The Office of Victims Assistance (OVA) provides services to survivors of sexual assault, intimate partner violence, and stalking as well as educational programming to prevent these crimes from occurring. The staff assists all survivors, regardless of when they were victimized in obtaining counseling, medical care, housing options, legal prosecution, and more. In addition, the OVA helps students access support services for academic problems resulting from victimization. The OVA is located in 204 Crawford and can be reached at (803) 323-2206. In the case of an after-hours emergency, please call Campus Police at (803)323-3333, or the local rape crisis center, Safe Passage, at their 24-hour hot-line, (803)329-2800.

For more information please visit: <http://www.winthrop.edu/victimsassistance/>

*Tentative Course Schedule. Topics and reading assignments may be subject to change at the instructor's discretion. Any changes will be announced during class time.*

<b>Day</b>	<b>Date</b>	<b>Lecture Topic</b>	<b>Assigned Reading</b>
20-Aug	Tue	Introductions and Pleasantries; Begin Origin of Earth	
22-Aug	Thu	Origin of the Earth and its Structure, Begin Minerals	Chpt. 1; Chpt. 3
27-Aug	Tue	Minerals	
29-Aug	Thu	Plate Tectonics I	Chpt. 2
3-Sep	Tue	Plate Tectonics II	
5-Sep	Thu	Igneous Rocks	Chpt. 4 Chpt. 5
10-Sep	Tue	Weathering	Interlude B. Online reading
12-Sep	Thu	Soils	
17-Sep	Tue	Exam #1	
19-Sep	Thu	Sedimentary Rocks I	Chpt. 6
24-Sep	Tue	Sedimentary Rocks II	
26-Sep	Thu	Metamorphic Rocks	Chpt. 7
1-Oct	Tue	Seismology	Chpt. 8
3-Oct	Thu	Structural Geology	Chpt. 9
8-Oct	Tue	Age Dating I	Chpt. 10
10-Oct	Thu	Age Dating II	Chpt. 10
15-Oct	Tue	<i>Fall Break - No Class</i>	
17-Oct	Thu	Exam #2	
22-Oct	Tue	Surface Water I	Chpt. 14
24-Oct	Thu	Surface Water II	
29-Oct	Tue	Groundwater I	Chpt. 16
31-Oct	Thu	Groundwater II	
5-Nov	Tue	Energy and Resources	Chpt. 12
7-Nov	Thu	Climate Change (Part 1)	Chpt. 19
12-Nov	Tue	Climate Change (Part 2)	
14-Nov	Thu	Exam #3	
19-Nov	Tue	Glaciers	Chpt. 18
21-Nov	Thu	Deserts	
26-Nov	Tue	Fascinating Geology Related Topic	
28-Nov	Thu	<i>Thanksgiving – No Class</i>	
5-Dec	Thu	Final Exam 11:30 AM	